IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Steven G. Johnson et al. Art Unit : Unknown
Serial No. : Examiner : Unknown
Filed : July 16, 2003
Title : LOW-LOSS PHOTONIC CRYSTAL WAVEGUIDE HAVING LARGE CORE RADIUS

BOX PATENT APPLICATION
Commissioner for Patents
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Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Under 35 USC §120, this application relies on the earlier filing date of application serial number 10/057,258, filed on January 25, 2002, which in turn claims priority to U.S. provisional patent applications 60/264,201 filed January 25, 2001 and 60/337,603 filed November 8, 2001. Copies of the listed references were submitted to and/or cited by the Office in the prior application and, therefore, are not provided in this application:

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Respectfully submitted,

Date: 7/16/03

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Substitute Form PTO-1449 (Modified)	U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket No. 13445-002002	Application No.
Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))		Applicant Steven G. Johnson et al.	
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U.S. Patent Documents

Examiner Initial	Desig. ID	Patent Number	Issue Date	Patentee	Class	Subclass	Filing Date If Appropriate
	AA	4,852,968	08/1989	Reed			
	AB	5,185,827	02/1993	Poole			
	AC	5,261,016	11/1993	Poole			
	AD	5,448,674	09/1995	Vengsarkar et al.			
	AE	5,641,956	06/1997	Vengsarkar, et al.			
	AF	5,661,839	08/1997	Whitehead			
	AG	5,814,367	09/1998	Hubbard, et al.			
	AH	5,882,774	03/1999	Jonza et al.			
	AI	5,894,537	04/1999	Berkey et al.			
	AJ	5,995,696	11/1999	Miyagi et al.			
	AK	6,043,914	03/2000	Cook et al.			
	AL	6,044,191	03/2000	Berkey et al.			
	AM	6,154,318	11/2000	Austin et al.			
	AN	6,175,671	01/2001	Roberts			
	AO	6,301,421	10/2001	Wickham, et al.			
	AP	6,334,017	12/2001	West			
	AQ	6,334,019	12/2001	Birks et al.			
	AR	6,380,551	04/2002	Abe, et al.			
	AS	6,389,197	05/2002	Iltchenko, et al.			
	AT	6,404,966	06/2002	Kawanishi et al.			
	AU	6,463,200	10/2002	Fink et al.	385	123	
	AV	2001/0026667	10/2001	Kawanishi, et al.			
	AW	2002/0039046	04/2002	Lipson, et al.			
	AX						
	AY						

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Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	BA	2,288,469	10/1995	Great Britain				
	BB	0 060 085	09/1982	Europe				
	BC	0 195 630	09/1986	Europe				
	BD	0 426 203	05/1991	Europe				
	BE	2000-035521	02/2000	Japan				
	BF	2001-051244	02/2001	Japan				
	BG	WO 94/09393	04/1994	WIPO				
	BH	WO 94/16345	07/1994	WIPO				
	BI	WO 97/01774	01/1997	WIPO				
	BJ	WO 99/47465	09/1999	WIPO				
	BK	WO 99/49340	09/1999	WIPO				
	BL	WO 99/49341	09/1999	WIPO				
	BM	WO 00/22466	04/2000	WIPO				
	BN	WO 00/51268	08/2000	WIPO				
	BO	WO 00/51269	08/2000	WIPO				
	BP	WO 00/77549	12/2000	WIPO				
	BQ	WO 01/69295	09/2001	WIPO				
	BR							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	BS	A. G. Bulushev et al. "Spectrally selective mode conversion at in homogeneities of optical fibers," Sov. Tech. Phys. Lett., 14, 506-507 (1988).
	BT	A. N. Lazarchik, "Bragg fiber lightguides," Radiotekhnika i electronika, 1, 36-43 (1988).
	BU	C. M. de Sterke et al., "Differential losses in Bragg fibers," J. Appl. Phys., 76, 680-688 (1994).
	BV	C. Moeller, "Mode converters in the Doublet III ECH microwave system," Int. J. Electronics, 53, 587-593 (1982).
	BW	D. Marcuse et al., "Mode conversion caused by diameter changes of a round dielectric waveguide," Bell Syst. Tech. J., 48, 3217-3232 (1969).

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	CA	D. Marcuse, "Theory of dielectric optical waveguides," (Academic, New York, 1974).
	CB	E. Luneville et al., "An original approach to mode converter optimum design," IEEE Trans. Microwave Theory Tech., 46, (1998).
	CC	E. Mao et al., "Wavelength-selective semiconductor in-line fibre photodetectors," Electronics Letters, Vol. 36, No. 6, pp. 515-516, March 16, 2000.
	CD	E. Marcatili et al., "Hollow metallic and dielectric waveguides for long distance optical transmission and lasers," Bell Syst. Tech. J., 43, 1783-1809 (1964).
	CE	E. Peral et al., "Supermodes of grating-coupled multimode waveguides and application to mode conversion between copropagating modes mediated by backward Bragg scattering," J. Lightwave Tech.," 17, 942-947 (1999).
	CF	F. Brechet et al. "Analysis of bandpass filtering behavior of singlemode depressed-core-index photonic bandgap fibre," Elec. Lett., 36, 870-872 (2000).
	CG	F. Brechet et al., "Singlemode propagation into depressed-core-index photonic-bandgap fibre designed for zero-dispersion propagation at short wavelengths," Elec. Lett., 36, 514-515 (2000).
	CH	G. H. Childs, "50mm diameter TE_{01} mode helical waveguide optimization," Electronics Lett., 14, 140-141 (1978).
	CI	H. F. Taylor, "Bending effects in optical fibers," J. Lightwave Tech., 2, 617-628 (1984).
	CJ	H. Kumric et al., "Optimized overmoded TE_{01}-to-TM_{11} mode converters for high-power millimeter wave applications at 70 and 140 GHz," Int. J. Infrared Millim. Waves, 7, 1439-1463 (1986).
	CK	H. Kumric et al., "Optimization of mode converters for generating the fundamental TE_{01} mode from TE_{06} gyrotron output at 140 GHz," Int. J. Electron," 64, 77-94 (1988).
	CL	H.Yajima, "Dielectric bypass waveguide mode order converter," IEEE J. Quantum Electronics, 15, 482-487 (1979).
	CM	I. Gannot, et al., "Current Status of Fexible Waveguides for IR Laser Radiation Transmission", IEEE J. Sel. Topics in Quantum Electr., IEEE Service Center, Vol. 2, No. 4, pp.880-888 (Dec 1996); XP000694378
	CN	I. K. Hwang et al., "Long-period fiber gratings based on periodic microbends," Opt. Lett., 24, 1263-1264 (1999).
	CO	I. Ogawa et al., "Design of a quasi-optical mode conversion system with variable output beam size," Int. J. Electron., 87, 457-467 (2000).
	CP	J. A. Harrington, "A review of IR transmitting, hollow waveguides", Fiber Integr. Opt. 19, 211-227 (2000).
	CQ	J.C. Knight et al., "Photonic band gap guidance in optical fibers" Science 282, 1476-1478 (1998).
	CR	J. J. Refi, "Optical fibers for optical networking," Bell Labs Technical Journal, 4,246-261 (1999).
	CS	J. N. Blake et al., "Fiber-optic modal coupler using periodic microbending," Opt;. Lett., 11, 177-179 (1986).
	CT	J. S. Levine, "Rippled wall mode converters for circular waveguide," Int. J. Infrared Milim. Waves," 5, 937-952 (1984).
	CU	J.L. Auguste et al., "-1800ps/(nm-km) chromatic dispersion at 1.55μm in dual concentric core fibre", Elec. Lett., 28th September 2000, Vol. 36, No. 20.

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	DA	J.W. Hahn et al., "Measurement of nonreasonant third-order susceptibilities of various gases by the nonlinear interferometric technique," J. Opt. Soc. Am. B, 12, 1021-1027 (1995).
	DB	K. J. Bunch et al., "The helically wrapped circular waveguide," IEE Trans. Electron Devices, 34, 1873-1884 (1987).
	DC	K. O. Hill et al., "Efficient mode conversion in telecommunication fiber using externally written gratings," Electron. Lett., 26, 1270-1272 (1990).
	DD	L. Dong et al., "Intermodal coupling by periodic microbending in dual-core fibers—comparison of experiment and theory," J. Lightwave Tech., 12, 24-27 (1994).
	DE	L. Gruner-Nielson et al., "Dispersion compensating fibers," Optical Fiber Tech., 6, 164-180 (2000).
	DF	L. M. Field, "Some slow-wave structures for traveling-wave tubes," Proc. IRE, 37, 34-40 (1949).
	DG	Lars Gruner-Nielson et al., "New dispersion compensating fiberes for simultaneous compensation of dispersion and dispersion slope of non-zero dispersion shifted fibres in the C or L band", OFC '00.
	DH	M. Ibanescu et al., "An all-dielectric coaxial waveguide," Science, 289, 415-419 (2000).
	DI	M. J. Buckley et al., "A single period TE_{02}-TE_{01} mode converter in a highly overmoded circular waveguide," IEEE Trans. Microwave Theory Tech., 39, 1301-1306 (1991).
	DJ	M. J. Weber et al., "Measurements of the electronic and nuclear contributions to the nonlinear refractive index of beryllium fluoride glasses," Appl. Phys. Lett., 32, 403-405 (1978).
	DK	M. Miyagi, et al., "Transmission characteristics of dielectric-coated metallic waveguides for infrared transmission: slab waveguide model", IEEE J. Quantum Elec. QE-19, 136-145 (1983).
	DL	M. Miyagi, et al., "Wave propagation and attenuation in the general class of circular hollow waveguides with uniform curvature", IEEE Trans. Microwave Theory Tech. MTT-32, 513-521 (1984).
	DM	M. Otsuka et al., "Development of mode converters for 28 GHz electron cyclotron heating system," Int. J. Electron, 70, 989-1004 (1991).
	DN	M. Thumm, "High power millimeter-wave mode converters in overmoded circular waveguides using periodic wall perturbations," Int. J. Electron., 57, 1225-1246 (1984).
	DO	Mitsunobu Miyagi et al., "Design theory of dielectric-coated circular metallic waveguides for infrared transmission," J. Lightwave Tech., Vol. LT-2, 116-126, April 1984.
	DP	N. J. Doran et al., "Cylindrical Bragg fibers: a design and feasibility study for optical communications," J. Lightwave Tech., 1, 588-590 (1983).
	DQ	Pochi Yeh et al., "Theory of Bragg fiber," J. Opt. Soc. Am., Vol. 68, 1196-1201 September 9, 1978.
	DR	R. F. Cregan et al., "Single-mode photonic band gap guidance of light in air," Science, 285, 1537-1539 (1999).
	DS	R.A. Abram et al., "Mode conversion in an imperfect waveguide," J. Phys. A, 6, 1693-1708 (1973).
	DT	S. Ahn et al., "Analysis of helical waveguide," IEEE Trans. Electron Devices, 33, 1348-1355 (1986).
	DU	S. H. Yun et al., "All-fiber tunable filter and laser based on two-mode fiber," Opt. Lett., 21, 27-29 (1996).
	DV	S.P. Morgan, "Theory of curved circular waveguide containing an inhomogeneous dielectric," Bell Syst. Tech. J., 36, 1209-1251 (1957).

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	EA	T. Cardinal et al., "Nonlinear optical properties of chalcogenide glasses in the system As-S-Se," J. Non-Cryst. Solids, 256, 353-360 (1999).
	EB	T. Iyama et al., "Propagation characteristics of a dielectric-coated coaxial helical waveguide in a lossy medium, IEEE Trans. Microwave Theory Tech., 45, 557-559 (1997).
	EC	T. Kawanishi et al., "Coaxial periodic optical waveguide," Optics Express, 7, 10-22 (2000).
	ED	T. Liang et al., "Mode conversion of ultrafast pulses by grating structures in layered dielectric waveguides," J. Lightwave Tech.," 15, 1966-1973 (1997).
	EE	T. M. Monro et al., "Holey Optical Fibers: An efficient modal model," IEEE J. Lightwave Technol., 17, 1093-1102 (1999).
	EF	T. ul Hag et al., "Optimized irregular structures for spatial- and temporal-field transformation," IEEE Trans. Microwave Theory Tech., 46, 1856-1867 (1998).
	EG	W. Lawson et al., "The design of serpentine-mode converters for high-power microwave applications," IEEE Trans. Microwave Theory Tech., 48, 809-814 (May 2000).
	EH	Y. Fink et al., "A dielectric omnidirectional reflector," Science, 282, 1679-1682 (1998).
	EI	Y. Fink et al., "Guiding optical light in air using an all-dielectric structure," J. Lightwave Tech., 17, 2039-2041 (1999).
	EJ	Y. W. Li et al., "Triple-clad single-mode fibers for dispersion shifting," IEEE J. Lightwave Technol., 11, 1812-1819 (1993).
	EK	Y. Xu et al., "Asymptotic analysis of Bragg fibers and dielectric coaxial fibers," In Proc. SPIE, A. Dutta, A. A. S. Awwal, N. K. Duttta, and K. Okamoto, eds., 4532, 191-205 (2001).
	EL	Yong Xu et al., "Asymptotic analysis of Bragg fibers," Optics Lett., Vol. 25, No. 24, pp. 1756-1758 December 15, 2000.
	EM	

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